GE Healthcare

ÄKTApurifier

Getting Started

ÄKTA™

Important user information

All users must read this entire manual to fully understand the safe use of ÄKTApurifier™.

WARNING!

The Warning sign highlights an instruction that must be strictly followed in order to avoid personal injury. Be sure not to proceed until the instructions are clearly understood and all stated conditions are met.

CAUTION!

The Caution sign is used to call attention to instructions or conditions that must be followed to avoid damage to the product or other equipment. Be sure not to proceed until the instructions are clearly understood and all stated conditions are met.

Note!

The Note sign is used to indicate information important for trouble-free and optimal use of the product.

CE Certifying

This product meets all requirements of applicable CE-directives. A copy of the corresponding Declaration of Conformity is available on request.

The **CE** symbol and corresponding declaration of conformity, is valid for the instrument when it is:

- used as a stand-alone unit, or
- connected to other CE-marked GE Healthcare instruments, or
- connected to other products recommended or described in this manual, and
- used in the same state as it was delivered from GE Healthcare except for alterations described in this manual.

Contents

1 About this guide

This guide is written for users who are not familiar with UNICORN™ software and ÄKTA™purifier. Here you will learn the basics of UNICORN and how to operate ÄKTApurifier™ from UNICORN.

UNICORN is a software package for control and supervision of the ÄKTAexplorer™ chromatography system. It runs on an IBM-compatible PC under Windows™, and includes hardware for interfacing the controlling PC to the chromatography liquid handling parts of ÄKTAexplorer.

In this guide you will learn how to:

- create methods
- prepare the system for runs
- perform runs
- make simple evaluations
- make reports
- perform automatic method optimization (Scouting) (optional)
- prepare automatically buffers of any pH (BufferPrep) (optional)

Follow the guide from page to page in front of the computer. The time will be well spent.

Note: *To follow the instructions it is not necessary to read the comments (written with smaller font) containing additional information.*

1.1 Pre-requisites

Before using the system, see the separate installation chapter in ÄKTApurifier User Guide:

- the system and the software must be installed and functioning, and
- the monitor and the pump must be calibrated

as described in the guide.

IMPORTANT! Before using ÄKTApurifier, read all the safety information in ÄKTApurifier User Guide.

1.2 Typographical conventions

Menu commands, field names and dialog box prompts are identified in the text by ***bold italic*** text. A colon separates menu levels, thus ***File:Open*** refers to the ***Open*** command in the ***File*** menu.

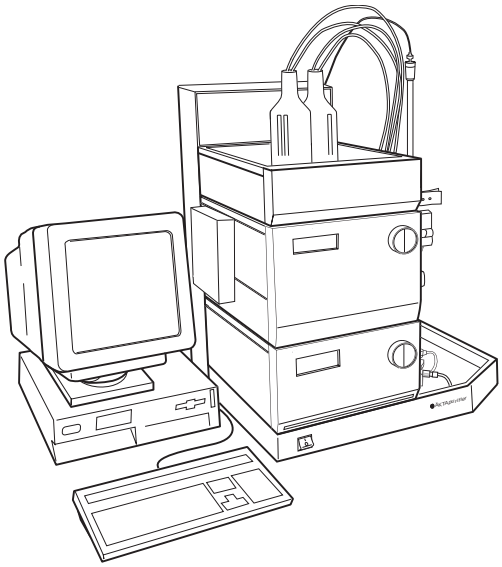
Hardware items, for example, keyboard key names, key combinations, key sequences, hard key names on the equipment and connector port names located on the equipment are identified in the text by **bold** text.

2 The system and the software

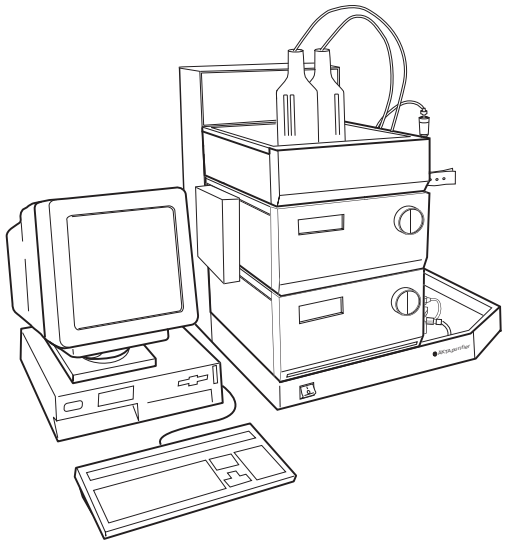
2.1 General

ÄKTApurifier is a fully automated liquid chromatography system designed for method development and research applications.

Two versions are available; ÄKTApurifier with monitor UV-900 for multiple wavelengths detection and ÄKTA purifier UPC with monitor UPC-900 for the combined measurement of UV-absoption, pH and conductivity.



ÄKTApurifier



ÄKTApurifier UPC

2.1.1 ÄKTApurifier

The separation unit of the chromatography system has two main modules which are stacked on the left-hand side of a base platform. They are:

- Pump P-900, a family of binary high performance gradient pumps.

  In ÄKTApurifier 100, the flow rate is up to 100 ml/min and the pressure up to 10 MPa (pump designation is P-901).

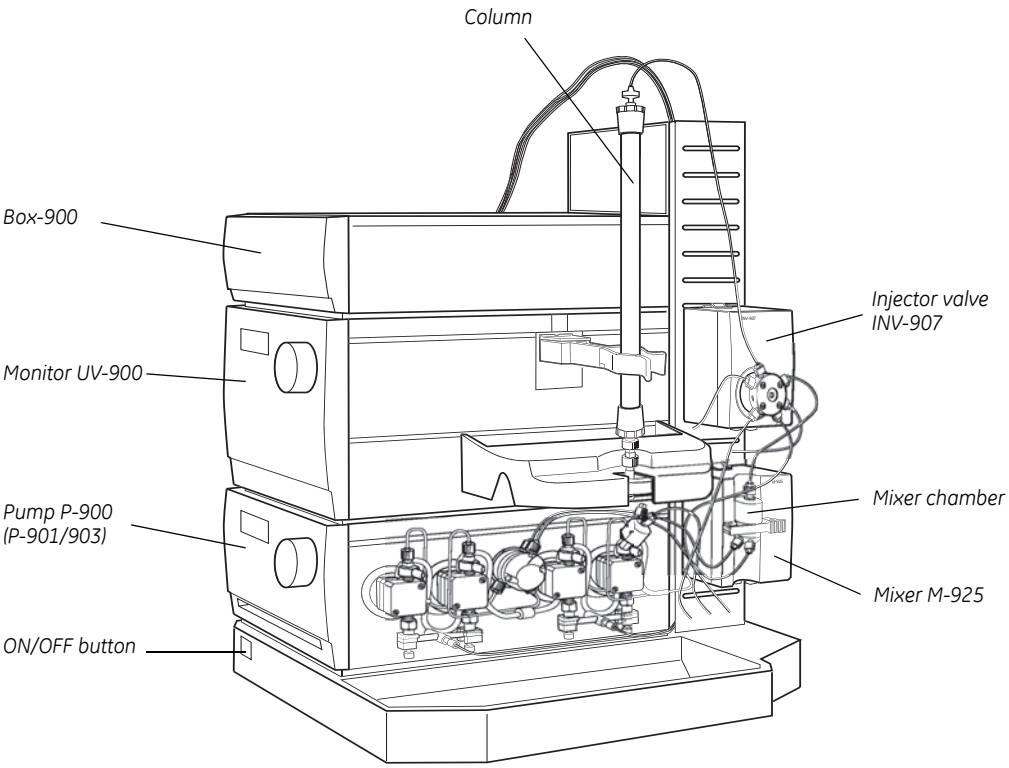
  In ÄKTApurifier 10, the flow rate is up to 10 ml/min and pressure up to 25 MPa (pump designation is P-903).

- Monitor UV-900, a multi-wavelength UV-Vis monitor for simultaneous monitoring of up to 3 wavelengths in the range 190-700 nm.

If installing a fraction collector, it should be placed on the right-hand side of the system.

Components, such as the mixer, column and different valves, are mounted on the right side of the system.

The separation unit is controlled from UNICORN software.



ÄKTApurifier

Pump P-900 and Monitor UV-900 can also be controlled individually from the modules, without UNICORN software. In this guide, however, you will only learn how to operate the chromatography system from UNICORN.

Switch on the chromatography system with the ON/OFF button located on the front of the base platform to the bottom left.

2.1.2 ÄKTApurifier UPC

The separation unit of the chromatography system has two main modules which are stacked on the left-hand side of a base platform. They are:

- Pump P-900, a family of binary high performance gradient pumps.

  In ÄKTApurifier 100, the flow rate is up to 100 ml/min and the pressure up to 10 MPa (pump designation is P-901).

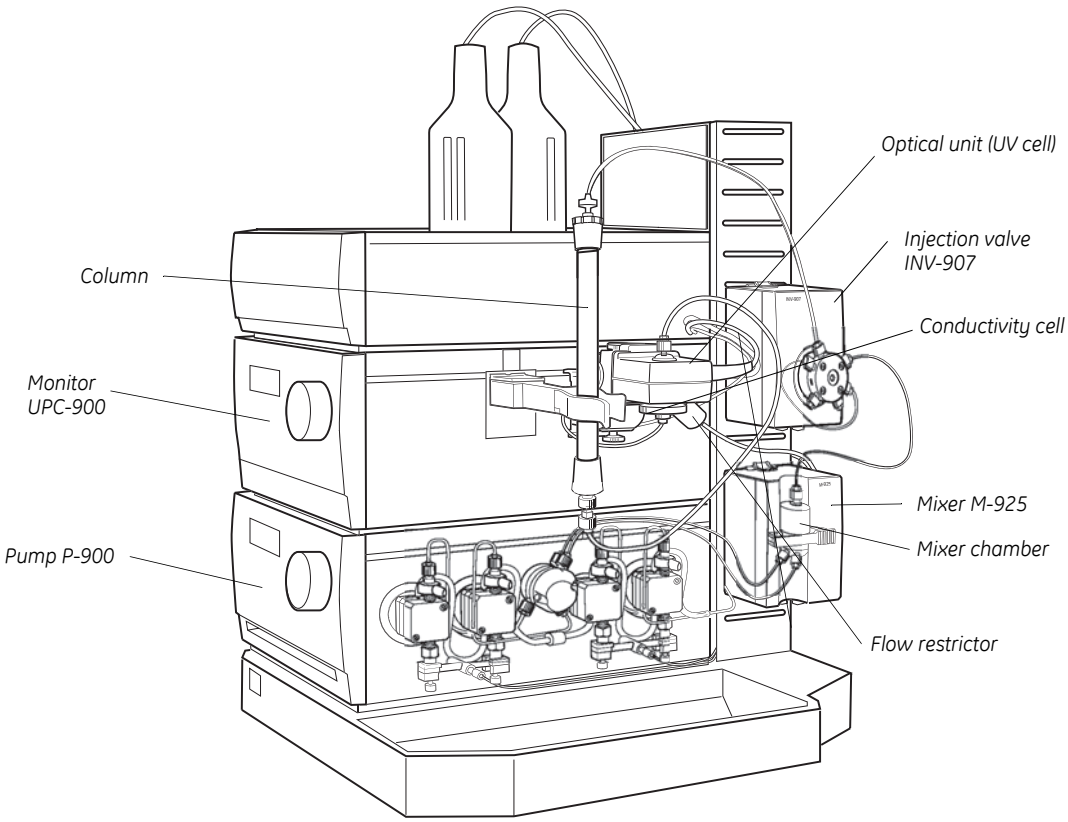
  In ÄKTApurifier 10, the flow rate is up to 10 ml/min and pressure up to 25 MPa (pump designation is P-903).

- Monitor UPC-900, a high precision on-line combined monitor for measuring UV absoption, conductivity and pH (optional)

If installing a fraction collector, it should be placed on the right-hand side of the system.

Components, such as the mixer, column and different valves, are mounted on the right side of the system.

The separation unit is controlled from UNICORN software.



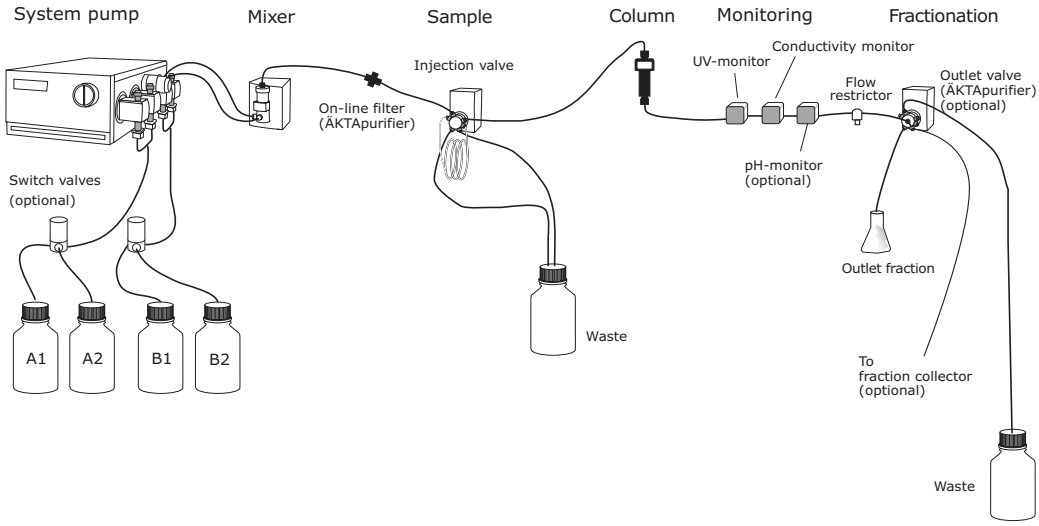
ÄKTApurifier UPC

Pump P-900 and Monitor UPC-900 can also be controlled individually from the modules, without UNICORN software. In this guide, however, you will only learn how to operate the chromatography system from UNICORN.

Switch on the chromatography system with the ON/OFF button located on the front of the base platform to the bottom left.

Comment:

The flow path between the different components in the system is shown and described below. It is not necessary to go through this in detail to make your first runs.



1 The pump has four pump heads, two for pump A and two for pump B. Pump A is the one closest to the front.

2 Pump inlets A and B are immersed in buffer A and B respectively. The buffer solutions are pumped to a mixer by the pump. Inlets A1 and B1 are placed in buffer A and B respectively. Inlets A2 and B2 are used when buffers are prepared automatically by Bufferprep. They can also be used for changing buffer during the method run.

3 The flow path continues from the mixer to the injection valve. (For ÄKTApurifier, via an online filter).

4 A sample loop is connected between ports 2 and 6 on the injection valve. The sample loop is filled manually using a syringe and a fill port connected to port 3 in the injection valve.

5 After the injection valve, the flow is directed through the column, the UV cell in the optical unit and the conductivity cell located below the optical unit.

6 The flow path then continues through the flow restrictor. The flow restrictor generates a constant backpressure to eliminate the risk of air bubbles entering the UV cell.

7 In ÄKTApurifier the flow continues to the outlet valve, which is used to switch the outlet flow to waste, fraction collection or outlet fraction.

8 If Frac-920 is included, the flow direction valve on Frac-920 directs the flow to the collection tubes or to waste.
If Frac-950 is included, the flow is directed to the accumulator (if connected), and then to the collection tubes or to waste.

2.2 UNICORN overview

1 Switch on the computer. Log on to Windows by first pressing **Ctrl-Alt-Del** and then clicking ***OK***. After a while the Windows desktop appears.

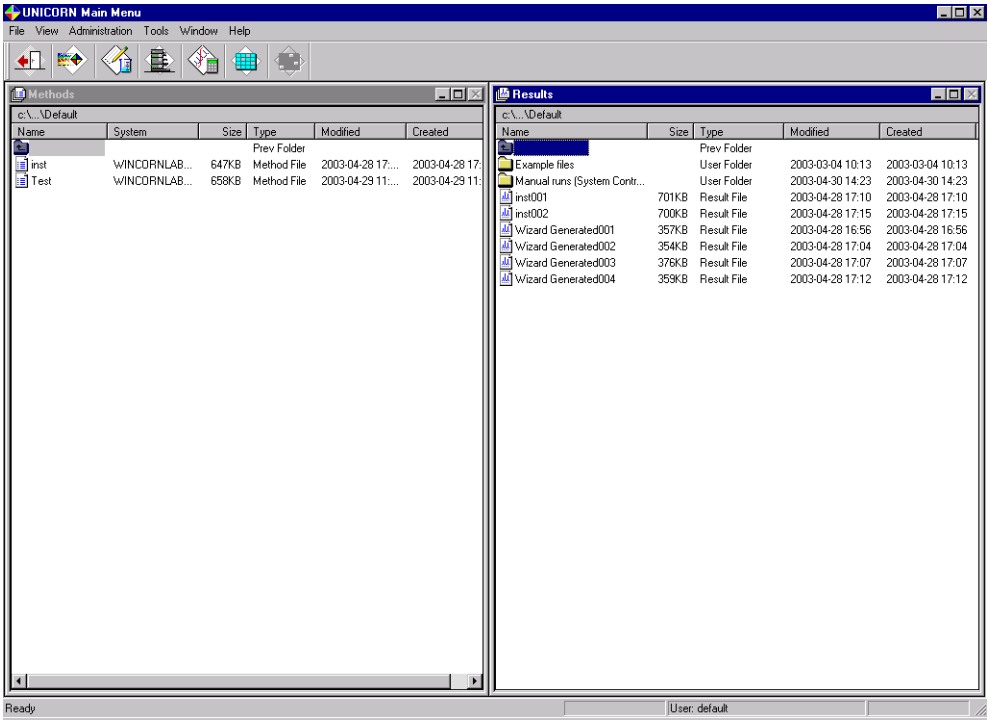
2 Start UNICORN by double-clicking on the UNICORN icon.

An information window appears during start-up.

3 In the ***Logon*** dialog, select a user from the ***Users*** list and enter the password. If you log in for the very first time, select user ***default*** and enter the password ***default***. Click ***OK***.

Note: *You should enter users and individual passwords before starting using ÄKTApurifier on a regular basis. See UNICORN User Manuals.*

4 Eventually, the ***UNICORN Manager*** appears on the screen.



5 ***UNICORN Manager*** module is the central part of the UNICORN displays. It is mainly used for file handling and administration. From this module you navigate through the control system.

In the ***Methods*** pane to the left, all method files that you create are displayed. A method file contains a series of instructions for controlling a run.

In the ***Results*** pane to the right, all result files are displayed. A result file is the result from a run, including all documentation (e.g. the method used) and the generated chromatogram.

In general, UNICORN consists of 4 different modules of which ***UNICORN Manager*** is one. The other modules are represented by icons in the toolbar. These modules are:

- Method Editor — Opens a dialog window for creating new methods.

- System control — Opens a dialog window for controlling the system and running your methods.

- Evaluation — Opens a dialog window for evaluating your results.

To swap between the modules, click their respective button in the task bar at the bottom of the screen.

Additional buttons are provided in the toolbar. These are:

- Instant run — Opens a dialog window where you directly can create a method to run. This is handy for starting routine runs instantly.

- Logon/Logoff — Opens a dialog window to control the log-on/log-off process.

- Method Queue* — Opens a dialog window for defining a new Method Queue.

- Existing Method Queue — Opens a dialog window for showing the Method Queue that is running.

* Method Queues are used to link several methods together.

2.3 Help

Comprehensive on-line help is available.

To get help about an instruction or module:

- Place the cursor on the instruction/module and press the ***F1*** key, *or*
- Click on the ***Help*** menu in the upper right corner of each module and select ***Help for.....*** to get general help about the current instruction or module and find new help topics, or ***Index*** for a specific topic.

In any dialog, click on the ***Help*** button to get help with using the current active dialog.

3 Creating a method

UNICORN control software is supplied with a *Method Wizard* used for creating new methods. The Method Wizard consists of a number of dialogs in which you answer questions and receive instructions on how to create your method. The options in subsequent dialogs depend on the choices you have made in the previous dialogs.

The Method Wizard covers the most commonly used chromatographic techniques.

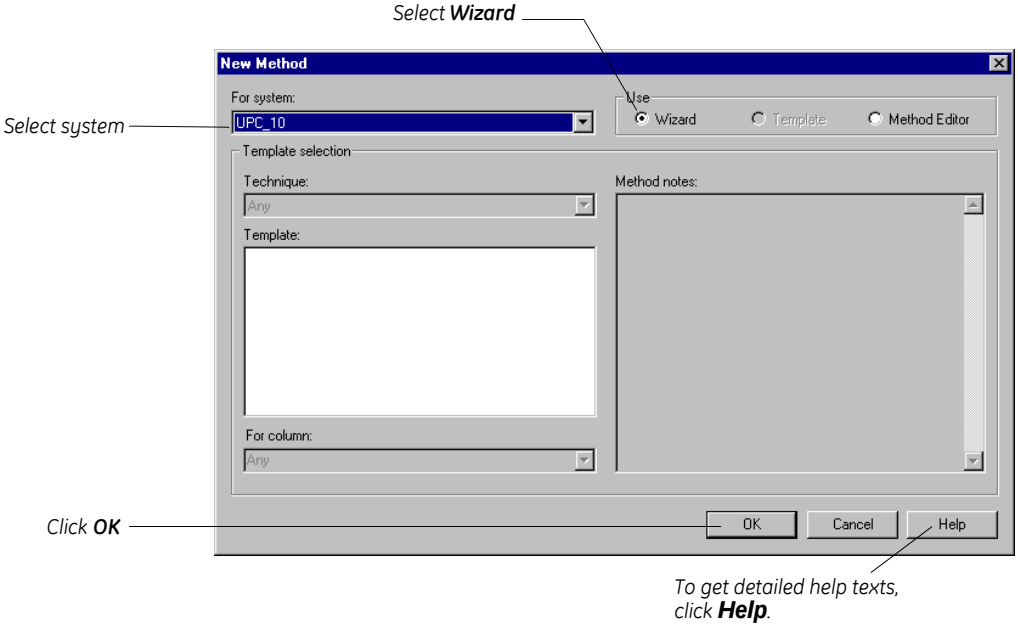
Note: *ÄKTApurifier UPC screen shots are shown in the example .*

To create a method:

1 Click the  icon in the ***Method Editor*** module. The Method Wizard is started.

or

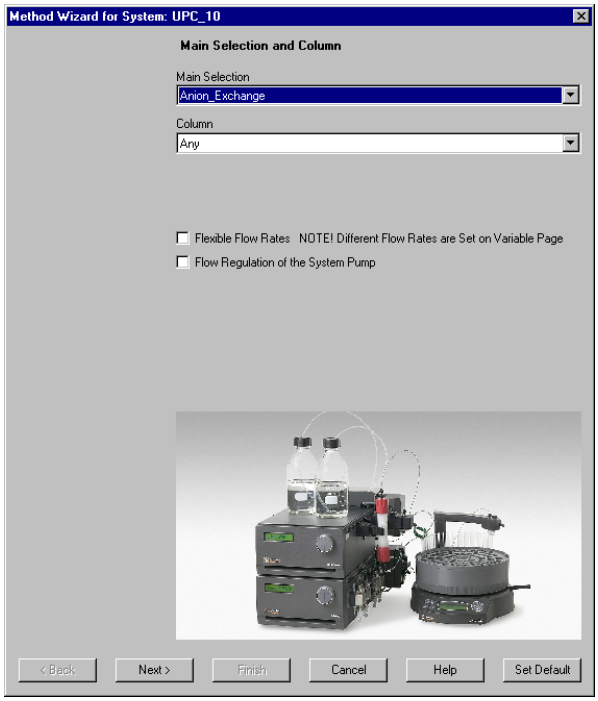
Select ***File:New*** in the ***Method Editor*** module. The ***New Method*** dialog appears.



- Select ***Wizard*** from the ***Use*** options.

- Select which system you want to use.
- Click ***OK***. The Method Wizard is started.

2 Select a chromatographic technique, for example ***Anion_Exchange*** from the ***Main Selection*** list.



3 Select the column you intend to use. The correct column volume, the recommended flow rate, and the correct pressure limit for that column will then be automatically implemented in the method.

Note: *If you cannot find your column in the list, you can add one. Refer to the UNICORN User Manual.*

Note: *If you manually alter the default values of the column, and thereby exceed the recommended values for the selected column, you will get a warning when you save your method.*

Note: *If you want to perform a test run without a column, you should still select a column (a small one is recommended) to get suitable default parameters in the method. Then, when running the method, use a piece of tubing to replace the column.*

4 If required, select ***Flexible Flow Rates*** and/or ***Flow Regulation of the System Pump***.

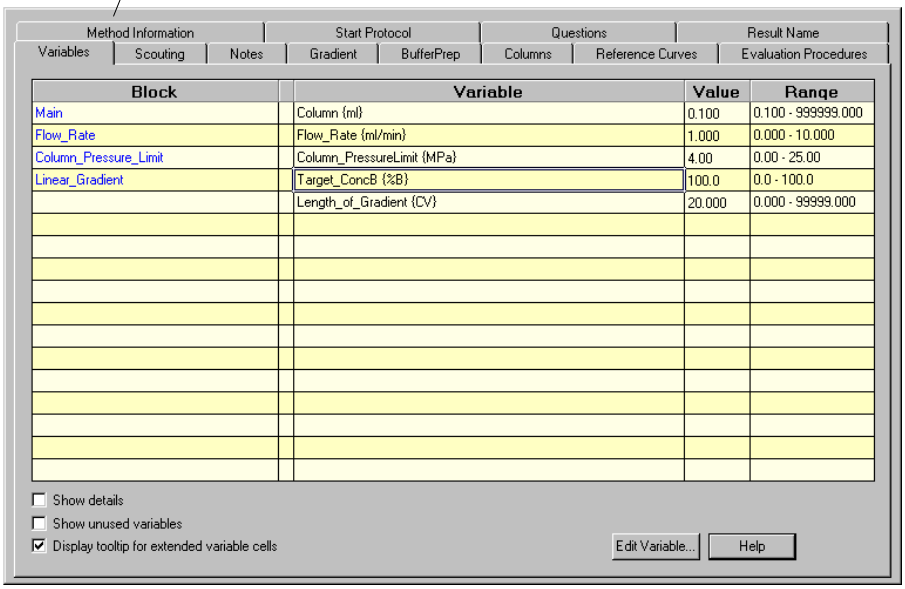
5 Click ***Next*** to go through the subsequent dialogs. In each dialog, select the appropriate parameter values.

Note: *The options available in the Method Wizard depend on the current system configuration. For example, if a fraction collector is installed, options for setting up the fractionation will appear in the Method Wizard.*

Note: *Click **Help** in the dialog for more information on the options in the Method Wizard.*

6 Click ***Finish*** in the last dialog. The Run Setup window appears. If not, select ***View:Run Setup***.

Click here to select page



Run setup consists of a number of pages. You select a page by clicking the respective tab at the top of the window.

Some of the more important pages are described below.

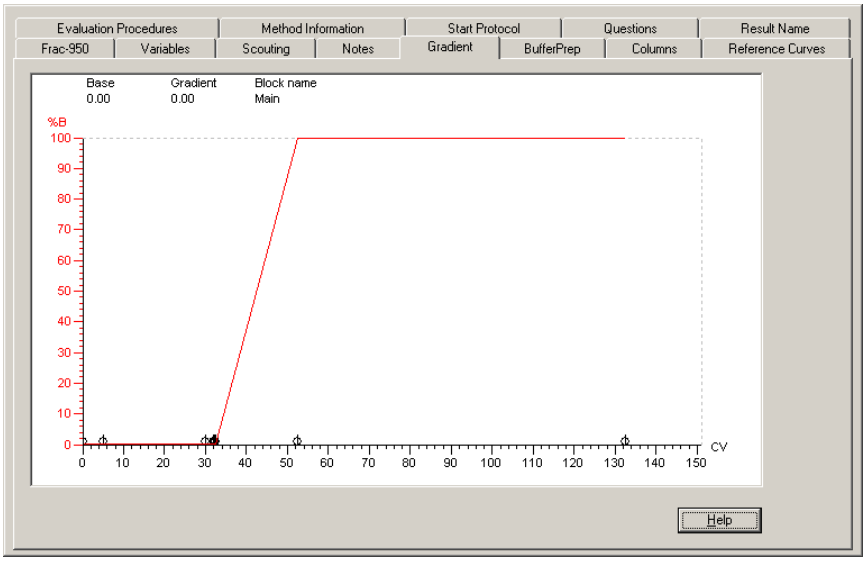
7 On the Variables page, the method is presented by a number of blocks. The blocks represent the typical steps in a chromatographic run:

- Start instructions

- Column equilibration
- Sample injection
- Wash out unbound sample
- Fractionation
- Gradient
- Clean after elution
- Re-equilibration

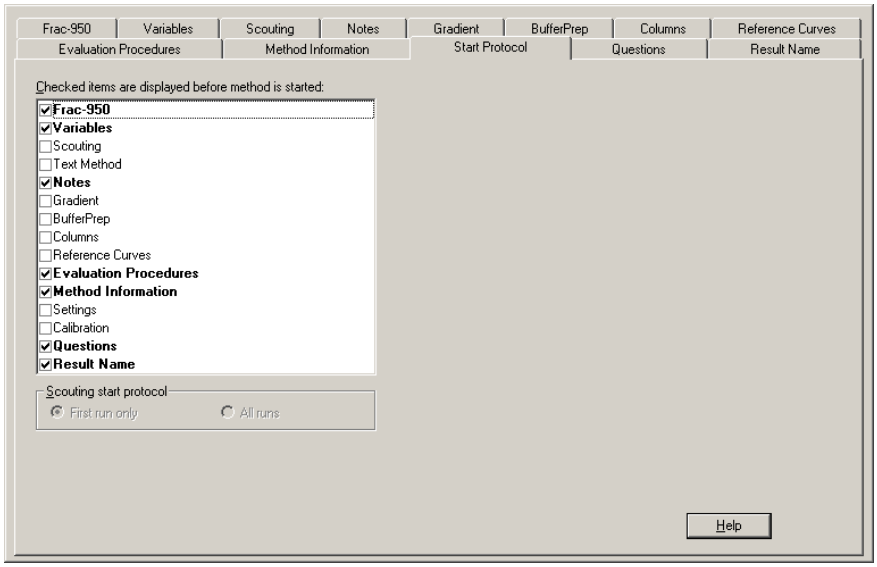
Some of the blocks contain a number of variables with suitable default values. The values can be changed to suit your application. Some of the variables are normally hidden but can be shown by checking the ***Show details*** box.

8 Click the ***Gradient*** tab to view the method graphically.



The length of each block is marked at the bottom of the graph. Click the x-axis to view the method in time, volume or column volumes.

9 Click the ***Start Protocol*** tab to decide which of the Run Setup pages is to be displayed at the start of a method run.



10 To save the method, select ***File:Save.*** In the ***Save As*** dialog, enter a name. Store the method in the directory of your choice by double-clicking on a directory. Click ***OK***.

In ***UNICORN Manager*** module, the method name appears in the ***Methods*** pane. The method name, followed by three consecutive numbers starting with 001 will then be used as default name for the result file of your method after runs.

Now you are ready to start a run. Go to Chapter *5 "Starting a run"*.

For more information on:

- fraction collection, refer to ÄKTApurifier User Guide
- using Scouting in a method, refer to ÄKTApurifier User Guide
- using BufferPrep in a method, refer to ÄKTApurifier User Guide

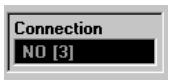
4 Preparing the system for a run

4.1 System connection

1 Click the ***1. System Control*** button in the Task bar at the bottom of the monitor.

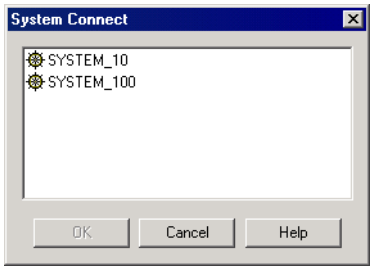
2 If ***YES*** is displayed in the ***Connection*** panel in the ***Run Data*** pane, UNICORN is connected to a system. Check that it is the correct system. The system name is displayed in the title bar of the window.

If it is the correct system, go to 4.2 in "*Preparing the flow path components*".



3 If wrong system is connected or if the ***Connection*** panel says ***NO***, select ***System:Disconnect*** and then click ***OK***.

4 Select ***System:Connect***. The System Connect dialog window appears:



5 Select your system from the list. If you are not connected to a network, only one system will be shown. Click ***OK***.

6 When connected, ***YES*** is displayed in the ***Connection*** panel in the ***Run Data*** pane. You only have to connect once. If you do not select ***System:Disconnect*****,** you will be automatically connected to the system the next time you login to UNICORN.

4.2 Preparing the flow path components

Preparing the tubing

1 Use the correct tubing kit for the column you intend to use. See ÄKTApurifier User Guide—*"Recommended tubing and columns"*. For most columns the i.d. 0.50 tubing kit can be used in ÄKTApurifier 10 and the i.d. 0.75 tubing kit in ÄKTApurifier 100.

Note: *If using Frac-920 with ÄKTApurifier 10, we recommend a maximum flow rate of 3.5 ml/min with the i.d. 0.25 mm tubing kit. At higher flow rates, the drops will turn to a continuous liquid stream.*

Note: *If tubing with too large inner diameter is used, the peaks will become broader than necessary. If tubing with too small inner diameter is used, the backpressure from the tubing might become higher than the maximum pressure for the column and the run will stop immediately after it is started.*

2 Immerse inlet tubing A in buffer A and inlet tubing B in buffer B (A2 and B2 respectively, if you changed this in the method).

3 Make sure that the waste tubing from the flow restrictor is put into an empty waste bottle.

4 If there is air in the inlet tubing or if you suspect air in the pump, purge the pump with a syringe as described in ÄKTApurifier User Guide—*"Preparing ÄKTApurifier"* or in *Pump P-900 User Manual*.

5 If pH measurement is desired calibrate the pH monitor. Refer to the UNICORN User Manuals or the *Monitor pH/C-900 User Manual*. Mount the pH electrode in the flow cell.

Checking the monitors

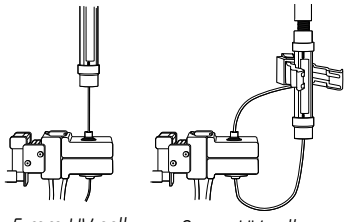
1 Make sure that the correct UV cell (2 or 5 mm) and filter is installed, and the correct wavelength set in the optical unit. See *Monitor UV-900 User Manual* and Chapter 2 in *Monitor UPC-900 User Manual*.

2 Make sure that pressure sensor, conductivity cell and pH electrode (optional) are calibrated according to the intervals listed in ÄKTApurifier User Guide—*"Calibration procedures"*.

Connecting the column

Connect the column between the injection valve, port 1, and the inlet port of the UV cell.

Note: *The inlet port of the 5 mm UV cell is on top of the optical unit. The inlet port of the 2 mm UV cell is underneath the unit.*



5 mm UV cell *2 mm UV cell*

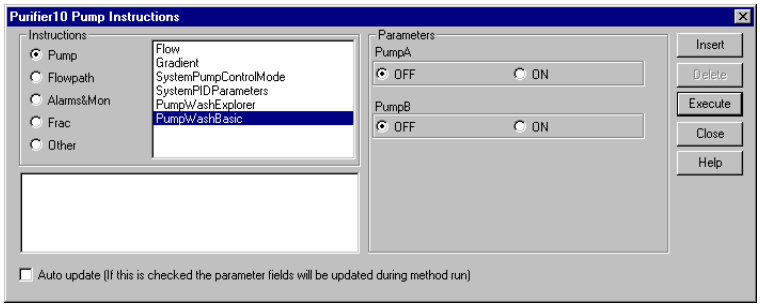
The illustration shows the UV-cell installation on the ÄKTApurifier UPC.

Filling the inlet tubing

1 Click the ***System Control*** button in the Task bar at the bottom of the monitor.

2 Fill the inlet tubing with the correct solutions by selecting ***Manual:Pump***.

Select instruction ***PumpWash*** and set ***PumpA*** and ***PumpB*** to ***ON***.

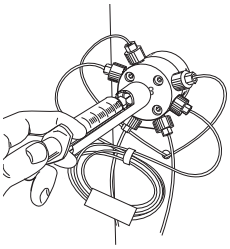


3 Click ***Execute*** to fill the inlet tubing. The injection valve will automatically switch to waste during the pump wash.

4 When the pump wash is finished, click ***End*** in the ***System Control*** toolbar.

Filling the sample loop or Superloop

1 Make sure that the correct loop or Superloop™ is mounted between port 2 and 6 on the injection valve.



2 Connect an injection fill port or a union luer female/1/16" male to port 3 on the injection valve.

3 Apply the sample manually with a syringe. More information on filling the loops is found in ÄKTApurifier User Guide—*"Sample application"*.

When using the fraction collector

1 Check that the tubing from the flow restrictor is connected to the fraction collector.

2 Put the waste tubing from the fraction collector into a waste bottle.

3 Insert a sufficient number of tubes into the fraction collector.

Note: *The delay volume (UV cell to fraction collector outlet) is not set at system delivery because it depends on the length of your outlet tubing. To set the delay volume in UNICORN, see ÄKTApurifier User Guide—"Setting the delay volume".*

5 Starting a run

5.1 Final checks

Before starting any method, we recommend a number of checks to make sure that no problems occur once the run has been started.

1 Check that the inlet tubings are immersed in the correct bottles for the method selected.

2 Check that there is sufficient eluent available.

3 Check that the waste bottle is not full and will accept the volume diverted to it during the run.

4 Check that the pump has been purged (i.e. no air in the inlet tubing). If not, purge the pump with a syringe as described in ÄKTApurifier User Guide—*"Preparing ÄKTApurifier"* or in *Pump P-900 User Manual*.

5 Check that the correct column has been fitted and equilibrated (if not included in the method).

6 Check that the correct mixer chamber and tubing are installed for the method selected.

7 Check that the fraction collector (optional) has sufficient tubes fitted and is connected to the flow restrictor.

5.2 Setting up and starting the method

Note: *ÄKTApurifier UPC screen shots are displayed in the example below.*

1 Click the ***System Control*** icon.

2 Select ***File:Run....*** Select the method to start. Click ***OK*** (the method will not start yet).

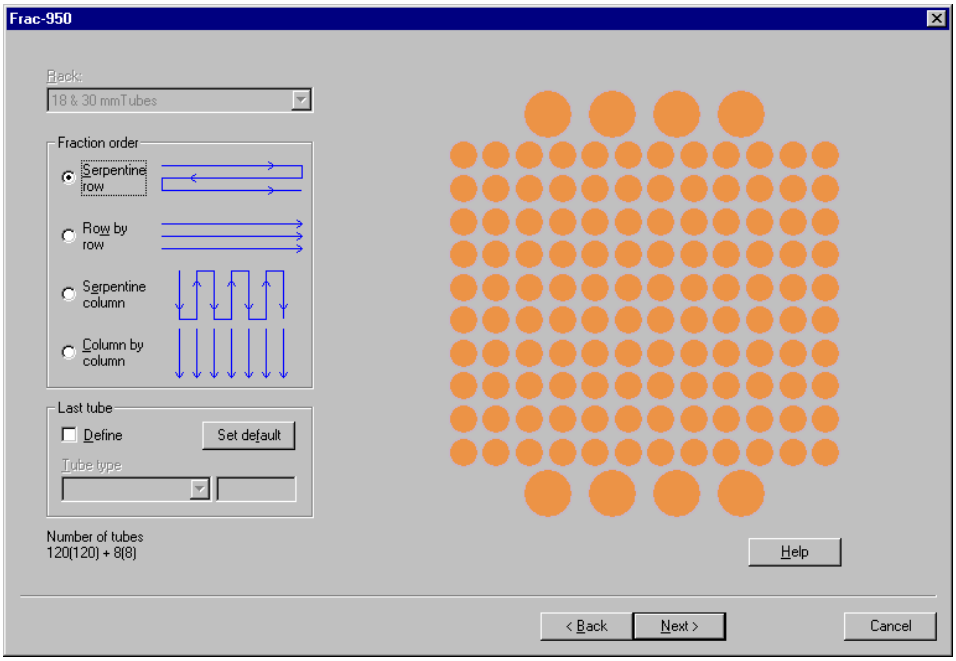
The method run is initiated in a series of pages in Run Setup in System Control.

Note: *Only the pages set in the Start Protocol for the method will appear during the initialization. Some of the pages are briefly described in the steps below.*

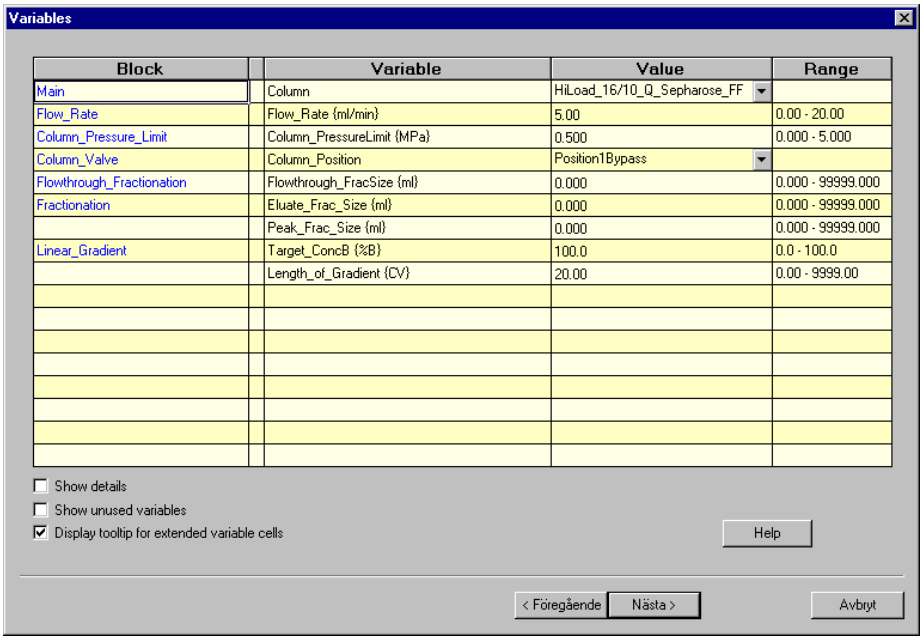
When a page is done, click ***Next*** to proceed.

3 If using Frac-950, the ***Frac-950*** page will appear if it has been selected in the Start Protocol.

On the Frac-950 page you can define the order of fractionation and set up the last tube used. The system will be paused when the last tube is reached and the fractionation will stop.



4 The ***Variables*** page is the same page as in the Method Editor. Here you can verify and fine tune the method before you proceed. This is very convenient when repeating runs with minor adjustments.



Some variables are normally hidden. Check the ***Show details*** box to view them.

5 On the ***Evaluation Procedures*** page you select the automated operations you want the system to perform after the run. Select ***Print_Chromatogram*** to have an automatic print-out after the run.

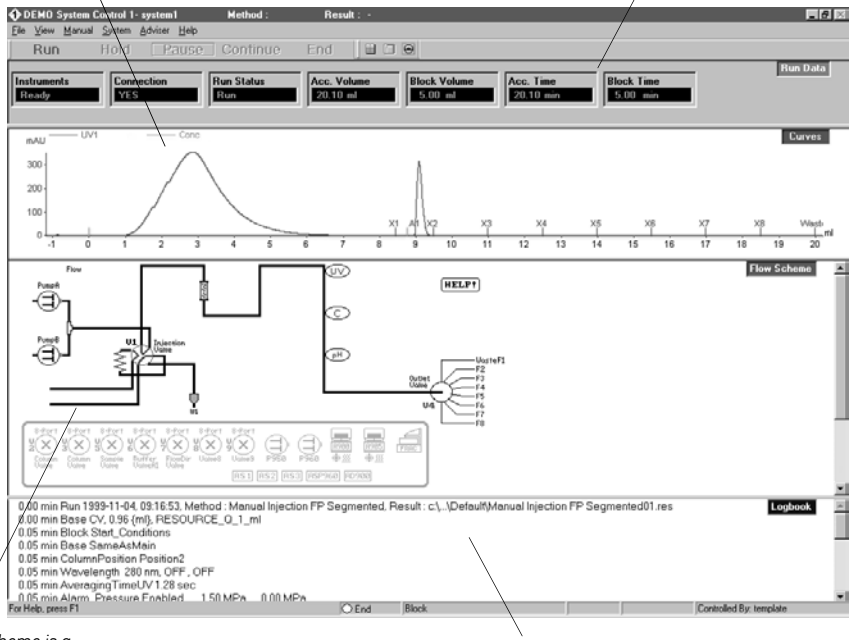
6 The ***Method Information*** page contains a summary of the information about the run. Under the ***Method Duration*** tab the approximate volume of buffer used (A+B) is shown as well as how long time the method will take.

7 On the ***Result Name*** page you name the result file and define where it should be stored. By default, the result file name will either be the same as the method name, the date of the run or a pre-defined name. The name is followed by a three-digit sequence number starting with 001. You can change this name and select a new directory by clicking ***Browse...***

8 Click ***START***. The run will start. You can view the run in the ***System Control*** module.

The Curves pane shows curves during the run.

The Run Data pane shows current values for running parameters



The Flow scheme is a graphical representation of the system flow path.

The Logbook pane shows when the instructions in the method are executed during the run.

6 Viewing a run

6.1 During a run

6.1.1 Monitoring the run

Viewing progress
The progress of the method being used can be viewed in detail on UNICORN and the status of certain parameters of the instrument modules can be viewed directly on their front panel displays.

The ***System Control*** module in UNICORN displays the current status of ÄKTApurifier and can display up to four panes for monitoring different aspects of the run.

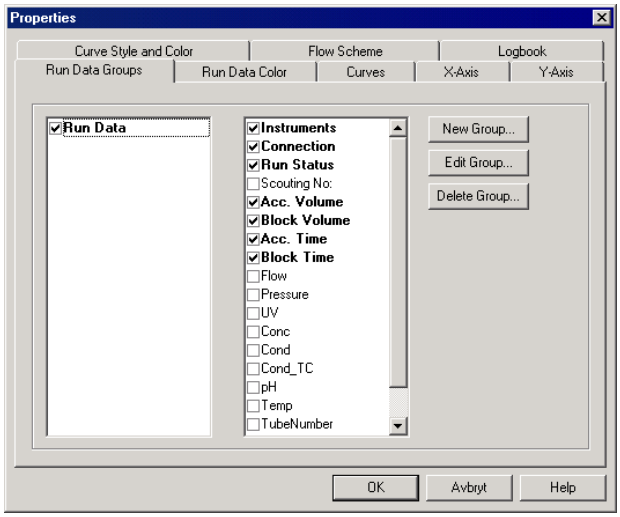
Click the ***Customize panes*** toolbar button or choose ***View:Panes*** from the menu to select which panes to display.

Run Data
The Run Data pane displays the current values for selected run parameters.

To customize the ***Run Data*** pane:

1 Right-click in the ***Run Data*** pane and select ***Properties***, or select ***View:Properties*** from the ***System Control*** menu.

2 Select the run data items to be displayed and click ***OK***.

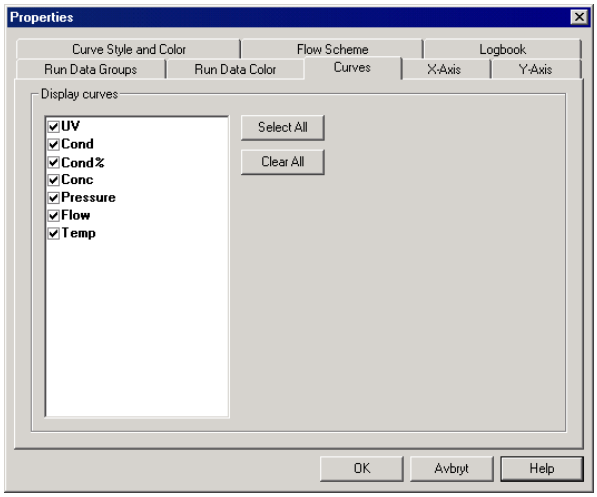


Curves
The curves pane displays the monitor signal values graphically.

To customize the ***Curves*** pane:

1 Right-click in the ***Curves*** pane and select ***Properties...***, or select ***View:Properties*** from the ***System Control*** menu to select the curves to be displayed. All curves are always stored in the result file.

2 Click the different tabs in the ***Curve Properties*** pane to set the properties for the different curves. Normally the curves are scaled with auto scaling, i.e. the scale is adjusted continually to the highest and lowest values for each curve.



3 To fix the Y-axis scale for a curve, mark the curve, click ***Y-axis***, click ***Fixed***, and enter the max. and min. values. You can repeat this for other curves. Click ***OK***.

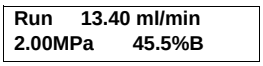
4 To maximize the ***Curve Data*** pane, position the cursor in the ***Curve Data*** pane. Click the right mouse button and select ***Maximize***. Go back to normal size by clicking ***Restore***.

5 To shift to a scale for another curve click the Y-axis scale, or click the curve name at the top of the ***Curve Data*** pane. The color of a curve, its Y-scale, and its name are always the same. Click the X-axis to shift between time and volume.

Flow scheme
The flow scheme is a graphical representation of the flow path in the chromatography system. During a run, the flow scheme shows open flow paths and monitor signals with numerical displays.

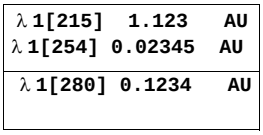
Logbook
All actions and unexpected conditions such as warnings are logged for every run, with date, time and current username. The logbook provides a complete history of any given run. The log is saved in the result file.

Front panel display
The front panel displays of Monitor UV-900, Monitor UPC-900 and Pump P-900 can be set to show their current status. In each case, the main operating menu display shows the most important parameters.

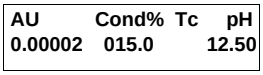


The main operating menu of Pump P-900 shows the current flow rate together with a mode indication, pressure and %B, if used.
The available modes are:

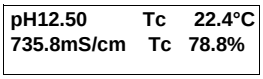
Run	The pump is running with the set flow rate.
End	The system is not running.
Pause	The pump is stopped but the set flow rate and the gradient values are retained.
Hold	The gradient is held at the value displayed and the pump continues to run. The method is held in its current status.



ÄKTApurifier: The main operating menu of the Monitor UV-900 shows the absorbance values with 4 digits for up to 3 active wavelengths.The display for the third wavelength is reached by turning the dial clockwise. It is also possible to view all three wavelengths simultaneously by turning the dial one step further (only three digits).



ÄKTApurifier UPC: The main operating menu 1 of Monitor UPC-900 shows the absorbance value with 6 digits for the selected wavelength, the conductivity as a percentage of full scale and the pH value (optional).



By turning the dial one click, an alternative display of the conductivity is shown (main menu 2). This display shows pH, temperature and the actual conductivity value in mS/cm or µS/cm, together with the percentage value.

6 Viewing a run

6.1 During a run

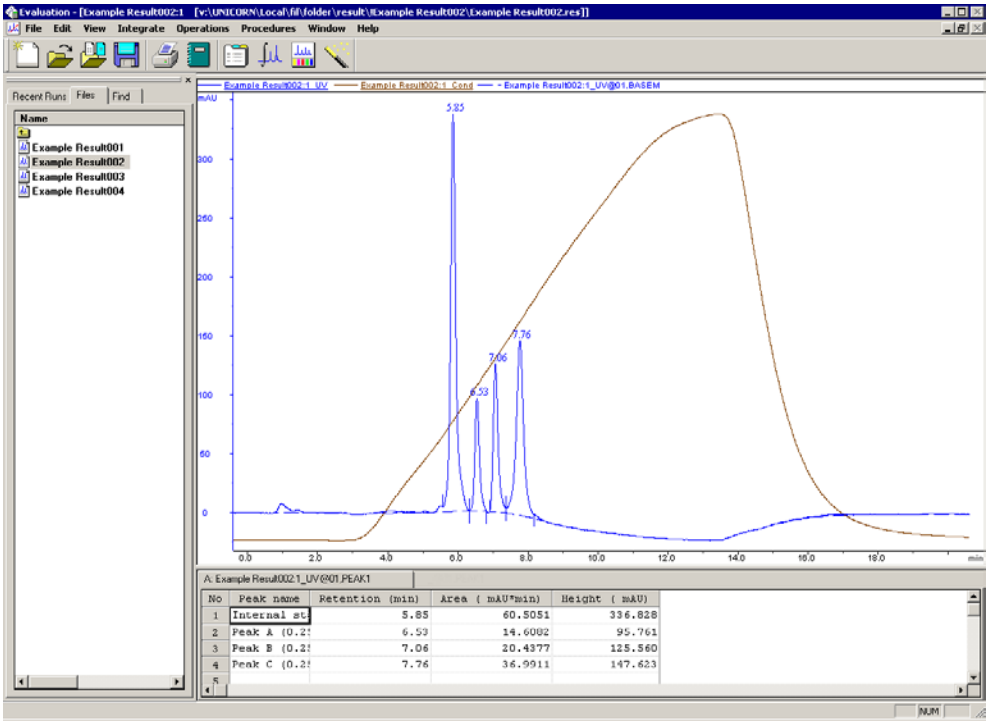
7 Viewing and printing the result

If you are satisfied with the automated printout obtained after the run (if selected), you do not need to alter anything described in this section. However, if you want to alter the chromatogram layout, this section will teach you the basics of the ***Evaluation*** module.

7.1 Viewing

1 After a run you can view the result. Click the ***UNICORN Manager*** icon. Double-click a result file icon in the list to the right.

2 The ***Chromatogram*** window is opened automatically in the Evaluation workspace when you open a result file. The ***Chromatogram*** window contains all the curves. Note that the term chromatogram is used here when talking about the whole window containing all the different curves.



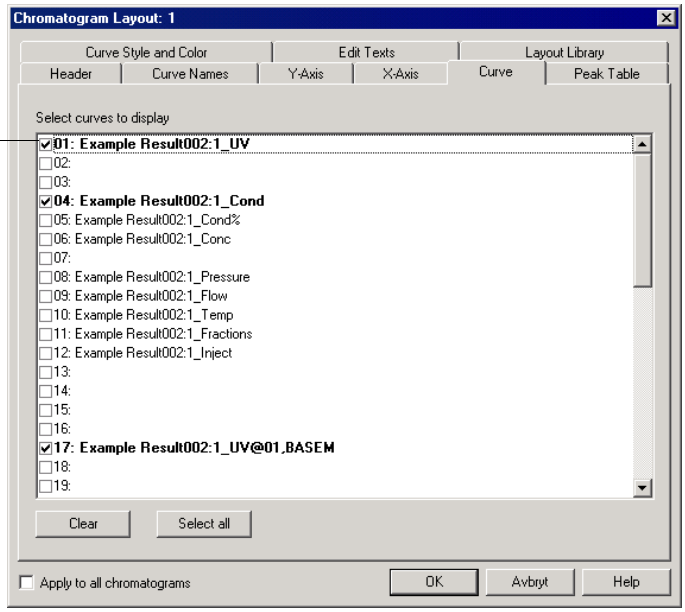
The result file from a run holds a complete record of the run, including method, system settings, curve data and run log.

Note: *Original raw data curves can never be modified, renamed or deleted from a result file.*

3 Maximize the ***Chromatogram*** window by clicking the square in the upper right corner.

4 All changes regarding the presentation of the curves are done in the ***Chromatogram Layout*** window. Position the cursor in the ***Chromatogram*** window. Right-click and select ***Properties....***, or select ***Edit: Chromatogram layout...*** to activate this window.

Highlight curves to view



5 Select the curves to view under ***Curves***.
The curves are named as ***Result001:1_"curve"*** where a curve can be, for example, UV_wavelength, pressure...etc. Click ***OK*** at the bottom of the ***Chromatogram Layout*** window.

6 To zoom in on the curves, click-and-drag in the chromatogram with the left mouse button. A rectangle appears on the screen. When you release the mouse button, the part within the rectangle will be enlarged. You can zoom further on the enlarged part.

To return to the complete chromatogram, right-click and select ***Undo*** or ***Reset zoom***.

7 To change to a scale for another curve, click on the ***Y-axis*** scale. The style and color of a curve, its Y-scale and its X-scale can all be changed.

8 Open the ***Chromatogram Layout*** window again. Click on the ***Y-axis*** and ***X-axis*** tabs to set the scale for the different curves. Normally, the curves are scaled with auto scaling (i.e. the highest and lowest values for each curve set the scale).

9 To fix the Y-axis scale, mark a curve, click ***Fixed***, and enter the max. and min. values for that curve. You can repeat this for other curves.

10 To fix the X-axis scale, click ***Fixed*** in the X-axis field, and enter the min. and max. values for the X-axis. Click ***OK.***

11 Click ***OK*** at the bottom of the ***Chromatogram Layout*** window to execute all the changes.

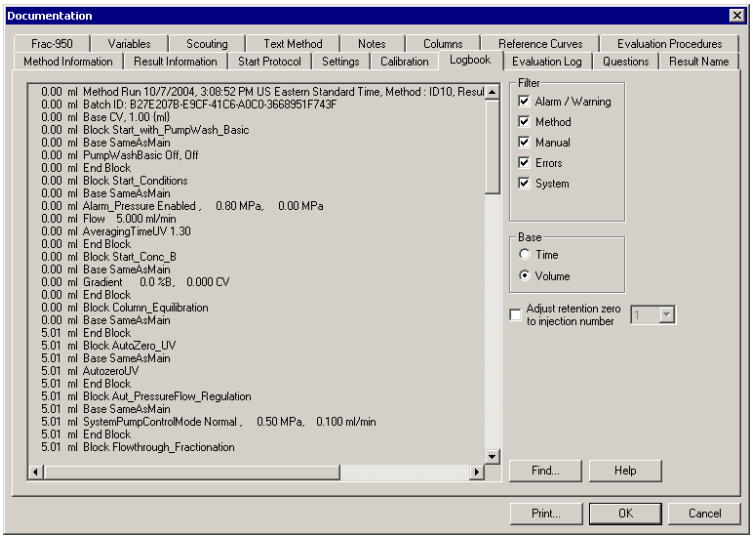
12 When you have made the necessary changes in the Chromatogram layout window, they can be saved as a new layout:

- Click the ***Layout Library*** tab at the top of the ***Chromatogram layout*** window.
- Click ***Save current layout as*** and type a name. Click ***OK***.

  Layouts can be selected in ***Save current layout*** and all your saved selections will apply. Saved layouts can be applied to any result file.

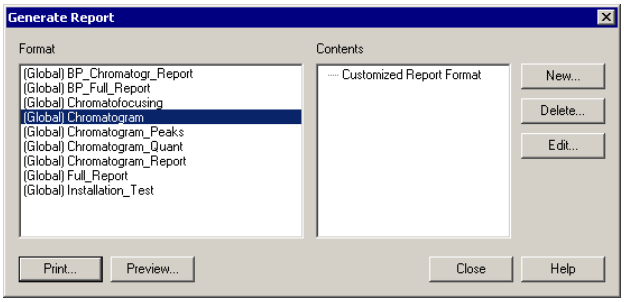
13 Minimize the chromatogram window by clicking on the smaller squares in the upper right corner.

14 Click the ***View Documentation*** button. A number of pages appear as in the Run Setup in the Method Editor. All documentation about the run is stored here, e.g. the method, answers to questions, variables, logbook...etc. For example, click the ***Notes*** and ***Logbook*** pages to check the contents. Close the ***Documentation*** window by clicking the ***X*** in the upper right corner.



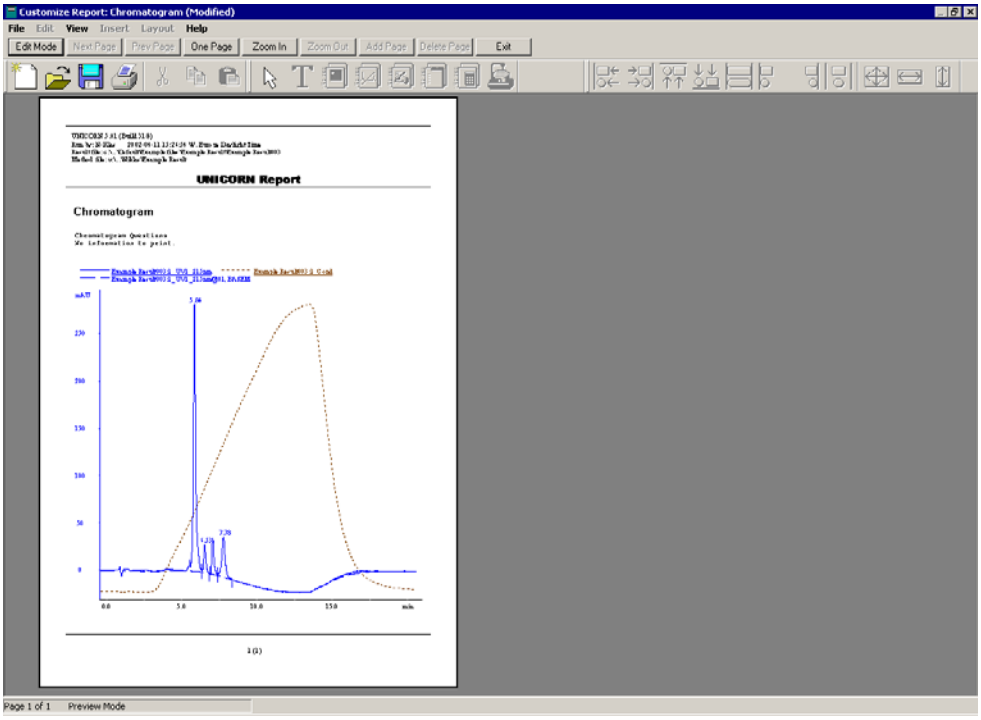
7.2 Printing and creating a report

1 To print the chromatogram, select ***File:Report***. The ***Generate Report*** dialog opens.



2 Select, for example, format ***(Global) Chromatogram.*** This will create a report containing the chromatogram and the questions on one page.

3 Click ***Preview*** to view the report on the screen.



7.2.1 Adding information to the report

1 Click ***Edit Mode*** to enable changes in the report.

2 To add an empty page to the report, click ***Add Page***.

3 Select from the ***Insert*** menu**,** the item to include. Items available are:

- Free text
- Picture
- Text method
- Chromatogram
- Documentation
- Evaluation log
- Quantitate and molsize (optional)

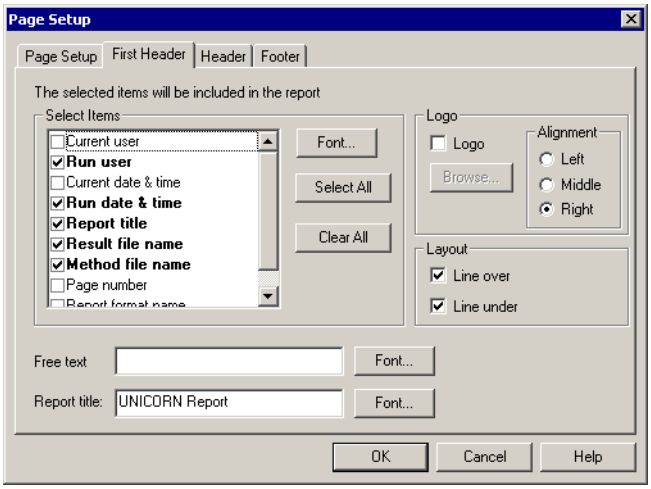
- Frac-950 (optional).

4 Move the mouse pointer into the page area of the window. You will notice that the mouse pointer has an additional symbol according to the item type you selected to insert.

5 Click-and-drag to create a box of the desired size. Release the mouse button. A dialog is displayed specific to the type of item inserted. Make the appropriate selections in the dialog and then click ***OK*** to view the inserted item.

7.2.2 Change page layout

1 If you want to change the page layout, select ***Edit:Page Setup***. The ***Page Setup*** dialog opens and you can, for example select page size and items to be included in the header and in the footer. The information selected here will be printed in the report. Click ***OK***.



2 Click ***Print*** to print the report.

7.3 Printing all method instructions with explanations

1 Select ***Method Editor:File*** and click ***Print***. This opens a window containing instructions that are printable.

2 Make sure that the ***Instruction Set*** box is checked and clear any unwanted items.

3 Click ***Print*** to print the instructions.

8 Going further

Once you are used to the system and software you may want to learn more about it and its capabilities. Below is a list of operations and descriptions that you may find of interest, they are cross-referenced to other manuals in the ÄKTApurifier manual package.

To learn about	Read manual/section
Purifying E. coli proteins	2 in the Method Handbook
Purifying synthetic peptides	3 in the Method handbook
Purifying oligonucleotides	4 in the Method Handbook
Different sample applications options	ÄKTApurifier Optional Configurations User Manual
Different fraction collection options	ÄKTApurifier Optional Configurations User Manual and ÄKTApurifier User Guide
BufferPrep details	ÄKTApurifier User Guide
Columns and recommended tubing	ÄKTApurifier User Guide
Changing tubing kits	ÄKTApurifier User Guide
Calibrating monitors and pumps	UNICORN 5.10 User Manuals
Comparing chromatograms	UNICORN 5.10 User Manuals
Intergrating curves	UNICORN 5.10 User Manuals
Measuring HETP and resolution	UNICORN 5.10 User Manuals
Exporting curves and data to other programs	UNICORN 5.10 User Manuals
Finding information about a certain menu instruction in UNICORN	Click on Help button in the dialog box that appears, or look in the index in UNICORN 5.10 User Manuals

Controlling Pump P-900, Monitor UV-900 and Monitor UPC-900 from the dials on the instruments themselves	ÄKTApurifier User Guide to unlock the dials. Chapter 3 in the User Manual for each instrument, found in the binder ÄKTAdesign Components.
Details about each component	See each individual manual in the binder ÄKTAdesign Components
Security features	UNICORN 5.10 User Manuals
Controlling the system from a remote computer	UNICORN 5.10 User Manuals

9 Short instructions

The following short instructions are intended as a guide for users who are fully familiar with the safety precautions and operating instructions described in this manual. The instructions assume that the unit is installed according to the installation instructions.

1 Select ***File:Method Wizard*** in the ***Method Editor*** module or click  .

2 If necessary, select a system and click ***OK***.

3 Go through the selections on the Method Wizard pages (click ***Next*** to go to next page).

4 Click ***Finish*** on the last page.

5 Select ***File:Save*** in the ***Method Editor*** module and give the method a name. Click ***OK***.

6 Click the ***System Control*** button in the task bar 

.

7 Select ***File:Run***. Select the method and click ***Run***.

8 The start protocol will appear. Check the method on the ***Variables*** page and change values as you require. Click ***Next*** a few times.

9 On the ***Evaluations procedures*** page, select ***Print_Chromatogram*** to get a print-out automatically after the run.

10 Click the ***Start*** button on the last page, the run starts.

Index

www.gehealthcare.com/lifescience

GE Healthcare Bio-Sciences AB
Björkgatan 30
751 84 Uppsala
Sweden

GE Healthcare Bio-Sciences AB
Björkgatan 30, SE-751 84 Uppsala, Sweden

GE Healthcare Europe GmbH
Munzinger Strasse 9, D-79111 Freiburg, Germany

GE Healthcare UK Ltd
Amersham Place, Little Chalfont, Buckinghamshire, HP7 9NA, UK

GE Healthcare Bio-Sciences Corp
800 Centennial Avenue, P.O. Box 1327, Piscataway, NJ 08855-1327, USA

GE Healthcare Bio-Sciences KK
Sanken Bldg. 3-25-1, Hyakunincho, Shinjuku-ku, Tokyo 169-0073, Japan

Asia Pacific Tel: +852 2811 8693 Fax: +852 2811 5251 • Australia Tel: + 61 2 9899 0999 Fax: +61 2 9899 7511 • Austria Tel: 01/57606-1619 Fax: 01/57606-1627 • Belgium Tel: 0800 73 888 Fax: 03 272 1637 • Canada Tel: 800 463 5800 Fax: 800 567 1008 • Central, East, & South East Europe Tel: +43 1 982 3826 Fax: +43 1 985 8327 • Denmark Tel: 45 16 2400 Fax: 45 16 2424 • Finland & Baltics Tel: +358-(0)9-512 39 40 Fax: +358 (0)9 512 39 439 • France Tel: 01 69 35 67 00 Fax: 01 69 41 96 77 • Germany Tel: 0761/4903-490 Fax: 0761/4903-405 • Italy Tel: 02 27322 1 Fax: 02 27302 212 • Japan Tel: +81 3 5331 9336 Fax: +81 3 5331 9370 • Latin America Tel: +55 11 3933 7300 Fax: +55 11 3933 7304 • Middle East & Africa Tel: +30 210 9600 687 Fax: +30 210 9600 693 • Netherlands Tel: 0165 580 410 Fax: 0165 580 401 • Norway Tel: 815 65 555 Fax: 815 65 666 • Portugal Tel: 21 417 7035 Fax: 21 417 3184 • Russia & other C.I.S. & N.I.S Tel: +7 (095) 232 0250, 956 1137 Fax: +7 (095) 230 6377 • South East Asia Tel: 60 3 8024 2080 Fax: 60 3 8024 2090 • Spain Tel: 93 594 49 50 Fax: 93 594 49 55 • Sweden Tel: 018 612 1900 Fax: 018 612 1910 • Switzerland Tel: 0848 8028 12 Fax: 0848 8028 13 • UK Tel: 0800 616928 Fax: 0800 616927 • USA Tel: 800 526 3593 Fax: 877 295 8102

imagination at work

Getting Started 28-4079-54 AA 03/2006